

### REMARKS

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 33-56 are pending in this case. Claims 33-56 have been rejected under § 102(b) and/or § 103(a). Claims 33-56 are canceled, without prejudice. New claims 57-82 are presented in the belief that they recite allowable subject matter. New claims 57-82 draw support, inter alia, from original/canceled claims 33-56.

### Interview Summary

Reference is made to a telephone interview conducted on May 8, 2007, between Examiner Kishor Mayekar of the PTO, Professor Raymond Reuven Boxman (an inventor), and the Applicant's representative. The interview related to the § 102(e) and § 103(a) rejections of independent claims 33 and 52 over the Ohshima et al. (US 5,482,601) and Takikawa (US 6,759,024) references. Applicant presented several features of the instant invention that appear to overcome the rejections of record, as detailed below.

Specifically, discussion touched upon the electrical voltage supply being configured to deliver an electrical pulse having a duration of less than one millisecond—approximately 3 to 4 orders of magnitude smaller than “as short as three seconds” (with no preferred range) disclosed by Takikawa. Additional discussion centered on how the disclosure of Takikawa teaches away from pulses that are so short that they cannot be defined in terms of DC or AC pulses.

Furthermore, discussion touched upon a non-inert gas-containing work environment associated with the workpiece, and a workpiece electrode arrangement

having substantially no carbon content. Applicant explained that Ohshima and Takikawa are not properly combinable regarding these two important features.

Finally, subsequent published research by Parkansky, Boxman et al. proves the efficacy of workpiece electrodes having substantially no carbon content in forming CNTs, as cited in the instant specification. Workpiece electrodes having substantially no carbon content in forming CNTs is a salient feature of the instant invention versus the prior art. The Examiner encouraged submittal of an affidavit referring to this publication/corroboration.

The Applicant thanks the Examiner for making himself available for this interview, and for his helpful clarifications.

#### **New Claims**

The Ohshima reference discloses a device for the production of carbon nanotubes. The device disclosed by Ohshima has a scraping member (8), which includes a blade to essentially scrape formed material from the continuously or intermittently rotating cathode (2). Furthermore, Ohshima employs DC current to produce an arc discharge—the duration of which is not specified—and which would be understood to one familiar with the art as being relatively long, certainly at least on the order of seconds.

Use of the scraping member and the long/unspecified duration of arc discharge cited by Ohshima teach a substantially different technology than specified in the instant specification and in new claim 57. Claim 57 cites, "... to form at least one carbon-nanotube in a first region of said surface, wherein said counter-electrode is configured[RLB1] to selectively determine said first region." an important distinction in the technology of the instant specification in that nanotubes are formed in a *controllable and localized fashion*, due to much shorter arc discharge duration and

overall configuration, with no need for scraping off and/or continuous removal. Furthermore, longer arc discharges (i.e. those having duration of longer than a millisecond) are known to destroy CNT's.

This above information is further noted in an affidavit submitted by the inventor, such affidavit noted in detail hereinbelow.

The Applicant has, in order to expedite the prosecution, included in new claim 57: "...at least one electrical pulse having duration of less than one millisecond in order to produce an electrical discharge..." as taught in the instant specification on page 20, line 1, away from Ohshima. Dependent claims 71 and 80 and further include: "...said electrical pulse having duration in the range of 0.2 to 20 microseconds.", as taught in the instant specification on page 20, lines 1 and 2.

Ohshima discloses technology operated solely in an inert He atmosphere. Takikawa further discloses that the workpiece or "second electrode" is of a pure carbon or largely carbon-containing material.

Inter alia, Takikawa teaches that: "When the AC or AC pulse is used for the arc discharge, the arc-treated material (2) may be made of pure graphite, graphite containing a metal catalyst or the like, or graphite having a metal catalyst sprayed, coated, plated or deposited thereon. DC arc or DC pulse arc causes pure graphite to be excluded from use for the arc-treated material (2). Instead, graphite containing a metal catalyst or the like or that having a metal catalyst sprayed, coated, plated or deposited thereon may be applied for this purpose."

As such, Applicant respectfully submits that Ohshima and Takikawa are not properly combinable.

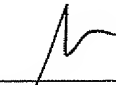
The Applicant has, in order to expedite the prosecution, included in new claim 75 to specifically identify the features of no carbon content of the workpiece material

and of a non-inert gas filled gap. Regarding the feature of non-carbon content of the workpiece and further to the point of the efficacy of workpiece electrodes having substantially no carbon content in forming CNTs (as indicated in the present specification., as is evident from Table 1 – see Samples 15 and 16 and the associated text: “the symbol “/” denotes that a CNT was probably present. However, the CNT cannot be identified with 100% certainty due to poor SEM contrast.”), a declaration/Affidavit under 37 CFR 1.132 is hereby submitted, citing subsequent published research by Parkansky, Boxman et al. proving the efficacy, as indicated in the specification.

Additionally, new dependent claim 82 reflects the efficacy of workpiece surfaces containing nickel, as disclosed in the instant specification.

In view of the above amendments and remarks it is respectfully submitted that new claims 57-81 are in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,

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